Inclusion in Physical Education: A Review of the Literature From 1995-2005

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The purpose of the review is to critically analyze English-written research articles pertaining to inclusion of students with disabilities in physical education published in professional journals both within and outside of the United States from 1995-2005. Each study included in this review had to meet seven a priori criteria. Findings of the 38 selected studies were divided into six focus areas: (a) support, (b) affects on peers without disabilities, (c) attitudes and intentions of children without disabilities, (d) social interactions, (e) ALT-PE of students with disabilities, and (f) training and attitudes of GPE teachers. Recommendations for future practice and research are embedded throughout the article.

Inclusion, the philosophy of supporting the educational needs of students with disabilities in general education classrooms (including general physical education, GPE; Block, 2007), is no longer considered a fad or trend. Most students with disabilities (around 96%) are educated in general education schools, and almost half spend the majority of the school day in general education classrooms (U.S. Department of Education, 2005). This represents a steady increase in the number of students with disabilities included in general education settings over the past twenty years. Public Law 108-446, Individuals with Disabilities Education Improvement Act of 2004 (the most recent reauthorization of Public Law 94-142, the Education for Handicapped Children Act), continues to emphasize placing students with disabilities into general education settings.

Until recently, research has failed to keep pace with practice. Block and Vogler’s review of the literature (1994) on inclusion in GPE found only ten studies that focused specifically on including students with disabilities in GPE (some studies used the terms mainstreaming or integration). These studies focused on children with mild disabilities (e.g., Karper & Martinek, 1983; Silverman, Dodds, Placek,
Shute, & Rife, 1984; Vogler, van der Mars, Cusimano, & Darst, 1992; 1990) as well as preliminary studies on attitudes of general physical educators toward inclusion (e.g., Rizzo, 1984; Rizzo & Vispoel, 1992).

During the past ten years, there has been an increase in the amount of research on inclusion of students with disabilities in GPE (Porretta & Sherrill, 2005; Reid & Broadhead, 1995). These studies have been much broader in scope and design than studies in the previous decade. For example, several researchers utilized a qualitative research model to determine experiences of students with disabilities in general physical education (e.g., Blinde & McCallister, 1998; Goodwin & Watkinson, 2000; Hutzler, Fliess, Chacham, & van den Auweele, 2002). Others explored attitudes of students without disabilities toward inclusion of peers with disabilities in GPE (e.g., Block, 1995; Slininger, Sherrill, & Jankowski, 2000; Verderber, Rizzo, & Sherrill, 2003). And still others expanded previous work on such topics as the use of peer tutors (e.g., Houston-Wilson, Dunn, van der Mars, & McCubbin, 1997; Lieberman, Dunn, van der Mars, & McCubbin, 2000), effects of inclusion on students without disabilities (e.g., Block & Zeman, 1996; Obrusnikova, Block, & Valkova, 2003), and attitudes of general physical educators (e.g., Block & Rizzo, 1995; Lienert, Sherrill, & Myers, 2001; Sideridis & Chandler, 1996).

Together, these studies have begun to help both general and adapted physical educators understand what is needed to make inclusion in GPE successful. While there is now a critical mass of studies that have focused on inclusion in GPE, there has been no effort to compile, organize, and analyze these studies. Therefore, the purpose of the review is to critically analyze English-written research articles pertaining to inclusion of students with disabilities in physical education published in professional journals both within and outside of the United States from 1995-2005. The articles will be coded using six emerging focus areas. Recommendations for future practice and research will be embedded throughout the paper.

**Method**

**Procedures for Identifying Articles**

Potentially relevant articles, reported between January 1995 and August 2005 were found via computer-aided literature searches. The keywords used for the electronic searches were “inclusion” or “mainstreaming” and “physical education.” The following indexing systems were searched: Health Medline, Heracles (Sportdoc), PsycINFO, ERIC, SPORTDiscus, and Web of Science. Additionally, all issues of the *Adapted Physical Education Quarterly (APAQ)* were manually searched to prevent omitting relevant articles that were not available, or not found via computer-aided searches, but should otherwise be included in the literature review. The reference lists of the articles found were also manually searched for additional articles.

After locating a series of studies, on the basis of article titles and abstracts, each study to be included in this review had to meet a set of a priori criteria regarding relevance to the purpose of this paper. The following seven eligibility criteria were selected by the two authors: (a) must be original study published from January 1995 to July 2005; (b) must be published in the English language; (c) must be located in periodical publications (i.e., studies located in books, unpublished papers [e.g., doctoral dissertations, master’s theses], conference proceedings, or in
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book chapters were excluded); (d) must consist of field based research or research that examined inclusion practices (i.e., studies aimed merely at developing new instruments or laboratory based were excluded); (e) must provide a clear definition of the sample selected, the independent and dependent variables measured, the assessment instruments employed, and the data analyzes used; (f) must focus on GPE students (kindergarten through twelfth grade, K-12) or on certified GPE teachers (i.e., studies on athletes, team or league players, coaches, pre-service GPE teachers, or paraprofessionals were excluded); and (g) must focus on inclusion of at least one student (K-12) who was clinically diagnosed with a disability (i.e., studies on preschoolers or adults with a disability were excluded).

To determine reliability of the coding process, the two authors independently assessed all selected studies according to the seven eligibility criteria. Each study was scored on a dichotomized scale with respect to meeting or not meeting each of the criteria. Thereafter, in instances of disagreement, articles were reassessed to reach an interrater consensus of 100%.

Results and Discussion

From 85 articles identified through various search methods and published between January 1995 and August 2005 in English, only 38 met our inclusion criteria. The purpose statements of the 38 articles showed that several different aspects of inclusion in GPE were studied over the past ten years. After careful analysis of the selected studies, the following six focus areas were selected: (a) support (n = 8), (b) affects on peers without disabilities (n = 6), (c) attitudes and intentions of children without disabilities (n = 4), (d) social interactions (n = 7), (e) ALT-PE of students with disabilities (n = 3), and (f) training and attitudes of GPE teachers (n = 12). The total of articles in the focus areas exceeds 100% because there were studies that took a multi-focus approach.

Support

Support refers to any person who provides assistance to a student with a disability in general physical education (Block, 2007). Support can include a variety of personnel, but in the physical education literature, support has focused on the use of peer tutors, teacher assistants, or specialists such as an adapted physical educator. The following research provides evidence that support can have a beneficial impact on the physical education experience of children with disabilities and can prevent negative effects on classmates without disabilities.

Support From a Peer Tutor. Peer tutoring is model in which peers—whether same-age or cross-aged—provide support to a peer with a disability in GPE. Research shows that utilizing trained peer tutors could improve the motor performance (Houston-Wilson et al., 1997) and motor engagement (Lieberman et al., 2000; Lieberman, Newcomer, McCubbin, & Dalrymple, 1997) of students with disabilities who were included in GPE. These studies utilized a Single-Subject Delayed Multiple Baseline Design.

To illustrate, Houston-Wilson et al. (1997) studied the effects of six trained peer tutors on motor performance of six students with mild intellectual disabilities
included in fourth- or fifth-grade GPE over a 36-day period. The training consisted of two 30-min sessions and enabled the peer tutors to use appropriate cueing (system of least prompts, modeling, and physical assistance), feedback (positive general and positive specific), and task analysis of five motor skills. Upon completion of the training, peer tutors were randomly assigned to the students with disabilities (one-on-one). The study was divided into two protocols. In the first protocol, three students with disabilities were analyzed in three conditions: baseline (no peer tutor), intervention by an untrained peer tutor, and intervention by a trained peer tutor. In the second protocol, three different students with disabilities were analyzed in just two conditions: baseline and intervention by a trained peer tutor. Participants in protocol one showed improvement in skill performance from 11.9% (baseline) to 15.3% (untrained peer tutor) to 38.7% (trained peer tutor). Similar improvement was found in protocol two (12.6% at baseline to 44.6% with a trained peer tutor). Clearly, improvement occurred for each participant only after the intervention by trained peer tutors.

Contrary to earlier research, Lieberman et al. (1997, 2000) did not employ a control group of untrained peer tutors in their studies. Lieberman et al (1997) studied the effects of six cross-aged, trained peer tutors (age 11) on motor engagement levels of six students with disabilities (Down Syndrome, autism, behavior disorder, developmental delay) included in kindergarten through second-grade GPE classes. The training program consisted of a description of the disability, appropriate cueing (system of least prompts, modeling, and physical assistance), and feedback techniques (positive general, positive specific, and corrective). Upon completion of one 150-min training session, participants were randomly assigned to the students with disabilities (one-on-one) for approximately 6-13 classes each. The results showed that the students with disabilities significantly improved their motor appropriate engagement levels from 62% to 83%.

Similarly, Lieberman et al. (2000) studied the effects of eight same-aged, trained peer tutors on moderate to vigorous physical activity levels (MVPA) of eight deaf students, ages 10-12, included in fourth- or fifth-grade GPE classes (class size of 30 students). Majority of the training was consistent with Lieberman et al. (1997). In addition, the peer tutors were taught signs relevant to physical fitness instruction. Upon completion of five 30-min training sessions, participants were purposively assigned (one-on-one) to deaf students for approximately five months each. Results showed that the deaf students increased their MVPA from 22% to 41.5% of class time. Interestingly, the peer tutors also increased their MVPA from 19% to 37.9%.

Readers should be cautioned that all three studies utilized a purposive sampling technique in order to increase internal validity of the findings. While purposive sampling of participants is appropriate in applied research in our field (Sherrill & O’Connor, 1999), future studies should attempt more random selection that would allow more generalization of results. Moreover, future studies examining the effects of peer tutoring should provide detailed information on the training protocol used to train peer tutors and any ongoing support tutors received (e.g., support by a teacher assistant or adapted physical education specialist in GPE). Finally, future research should carefully examine the background of the peer tutor such as gender and race matching and the tutors’ previous experience with disability.
Support from a Teacher Assistant. Support from paid teacher assistants (TA), also known as paraprofessionals or teacher aids, may be necessary for students with more severe disabilities. TAs are assigned to work with students with severe disabilities, accompanying them to various classes during the day (including GPE) and providing assistance as needed. Numerous studies alluded to the presence of TAs in GPE (e.g., LaMaster, Gall, Kinchin, & Siedentop, 1998; Leinert et al., 2001). Lienert et al. (2001) interviewed 14 GPE teachers in the Dallas/Fort Worth area of Texas about their concerns regarding inclusion in GPE. The authors reported that approximately 15% of the GPE teachers relinquished their responsibilities for teaching students with disabilities and delegated them to the students’ TAs.

In another study by LaMaster et al. (1998), six GPE teachers from three Ohio school districts indicated that their TAs carried high caseloads and lacked training in physical education. Considering the unique needs of students with disabilities, one may question whether it is fair to these students to receive most of their education from either trained or untrained paraprofessionals, while students without disabilities are mostly taught by certified professionals (Giangreco, Edelman, Broer, & Doyle, 2001).

In the only study that examined the effects of TAs in GPE, Murata and Jansma (1997) found that a combination of a trained TA with a trained peer tutor improved participation of three students with multiple disabilities (intellectual disability plus severe behavior disorder), ages 14, 16, and 18. Using a Multi-Element Design comparing different conditions, the data were collected in a high school GPE class consisting of 24 high school students. Participants (TA, GPE teacher, and three peer tutors) received two 120-min training sessions on several academic learning time behaviors, prompting techniques, modification strategies, and specific roles and responsibilities of TAs and peer tutors. Upon completion of the training, peer tutors and TA were randomly assigned to targeted students with disabilities (one-on-one) for approximately ten GPE sessions each. Results showed that the activity and knowledge time percentages were significantly higher when students with disabilities were assisted by trained TAs and trained peer tutors compared to a trained GPE teacher condition (no support provided). As was the case in Lieberman et al. (2000), higher participation in physical activities was found in the trained peer tutors as well.

Though no reliable national data are available, it appears that TAs continue to engage in a broad range of roles in GPE. Research suggests that support in the form of trained TAs along with trained peer tutors can not only aid students with disabilities but prevent the inclusion of students with disabilities from disrupting the learning of peers without disabilities (Murata & Jansma, 1997). Yet, most of the current TAs do not have the physical education training or experience needed to accommodate students with disabilities without support from the GPE teacher or another specialist (LaMaster et al., 1998). Some have speculated that TAs can actually have negative effects on the social inclusion of students with disabilities (Block, 1998); however, no research in this area has been conducted. Collectively, trained TAs can be a wonderful resource in GPE as noted by Murata and Jansma (1997), but much more research is needed to assist us in understanding the most effective training strategies and models of service delivery. Moreover, we need to study the perspectives and outcomes of students who receive support from TAs.
Support From an APE Specialist. Perhaps the ideal (yet costly) form of support in GPE is the use of an APE specialist, someone who has specific training in APE beyond the undergraduate level and who has been assigned by the district to provide APE services to students with disabilities (Block, 2007). According to the results of a national job analysis (Kelly & Gansneder, 1998), most APE specialists work in urban settings, serve an average of 4.4 schools, and have an average caseload of 104 students. The effectiveness of the models of service delivery that rely on APE specialists was examined in two particular studies (Block & Zeman, 1996; Vogler, Koranda, & Romance, 2000).

Block and Zeman (1996) used a Pretest-Posttest Nonequivalent Control Group Design to compare motor skill acquisition and attitudes between two sixth-grade intact GPE classes (inclusion and noninclusion), after a 3 1/2 week GPE basketball unit (18 lessons per 40 min). Both classes had approximately 30 students with the inclusion class having an additional three students with severe intellectual disabilities (each with their own TA). Even though both classes significantly improved their mean motor skill scores after the unit, the class differences were not statistically significant. In addition, the Children’s Attitudes Toward Integrated Physical Education-Revised (CAIPE-R; 4-point scale; Block, 1995) showed that the inclusion class improved their attitudes toward inclusion of a peer with a disability while the noninclusion group did not show such improvement. Again, results should be viewed with some caution as the study utilized intact classes rather than random assignment, and there was tremendous direct, one-on-one support provided to each student with a disability from a TA and an APE specialist. Also, the authors did not measure the success and participation of the students with disabilities who were included.

Vogler et al. (2000) conducted an 18-week case study in an attempt to evaluate the effectiveness of an inclusive physical education class in which an APE specialist provides a direct, one-on-one instruction to a student with a disability. The GPE class consisted of 20 kindergarten students without a disability and a six-year-old male student with severe spastic diplegic cerebral palsy. The ALT-PE analysis demonstrated that the GPE teacher allocated class time effectively as noted by high time devoted to physical activities (53%) and relatively low time devoted to classroom management and transition (32%) and to knowledge activities (16%). In addition, the student with a disability and three randomly selected peers without a disability had high rates of on-task behaviors (53% and 48%, respectively), as well as high percentages of motor appropriate engagement (41% and 47%, respectively). This indicated that the student with a severe physical disability was successfully included and progressed toward his Individual Education Program (IEP) objectives. Again, this was a case study with only one kindergarten student, and the student received a great deal of support compared to what is typically available in most schools.

Results of Block and Zeman (1996) and Vogler et al. (2000) do show that inclusion can be successful for both students with and without severe disabilities when the student with a disability is supported by trained personnel including a trained APE specialist. Others have suggested that an APE specialist serving as a consultant might be a reasonable bridge between having no APE specialist available and having an APE specialist providing direct service within GPE (e.g., Block & Conatser, 1999; Lytle & Collier, 2002). One study did show that consultation could be effective in supporting GPE teachers’ efforts to accommodate students...
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with disabilities in GPE. Heikinaro-Johansson, Sherrill, French, and Huuhka (1995) used an Evaluative Case Study Design to test the effectiveness of intensive versus limited consultative support by an APE specialist to two elementary GPE teachers in two communities in Finland. Results indicated that intensive support (weekly face-to-face meetings, weekly observations of GPE by the consultant and regular phone conversations) was much more effective than limited support (meeting at the beginning and end of a unit). More research is needed in how APE specialists can provide consultative support as well as measuring the effectiveness of such support.

Affects on Peers Without Disabilities

One argument against inclusion is that there is a fear that students with disabilities will somehow diminish from or significantly alter the program for children without disabilities. Interestingly, results from studies that have examined the effects of inclusion on students without disabilities have not supported this fear. This is particularly true in cases where students with mild disabilities are included (e.g., Halámiková & Valková, 2003; Obrusníková, Block, & Valková, 2003; Vogler, van der Mars, Cusimano, & Darst, 1998).

For example, Vogler et al. (1998) examined student and teacher behaviors across 14 middle school GPE classes. Participants were 14 GPE teachers, 14 middle school students with a “mild developmental delay,” and 14 seventh- or eighth-grade students without a disability. One student with and one student without a disability from each of the 14 teachers’ classes were randomly selected for the study. The ALT-PE analysis demonstrated that the teachers allocated class time effectively as noted by high time devoted to motor activities (55%) and relatively low time devoted to management and transition (29%) and to knowledge activities (11%). Similarly to Vogler et al. (2000), rates of on-task behavior were high for both students with and without disabilities (65% and 60%, respectively) and percentages of motor appropriate engagement were low (19% and 17%, respectively). Teacher feedback was more positive (59%) than negative (10%) or corrective (31%). The authors concluded students with disabilities participated in GPE similarly to peers without disabilities, and their inclusion did not negatively affect the learning of the students without disabilities or the ability of the GPE teacher to conduct an effective class. Results should be viewed with much caution given the limited number of observations of each setting and participant (only one observation for 40 min).

In another study, Obrusníková et al. (2003) examined the impact of including a 10-year-old male student with a physical disability (needing assistance to use his manual wheelchair) on students without disabilities. The authors used a Pretest-Posttest Nonequivalent Control Group Design to compare knowledge and motor skill acquisition between a fourth-grade inclusion class (21 students plus one student with muscular dystrophy) and a fifth-grade noninclusion class (i.e., 18 students with no student with disabilities) after a two-week volleyball unit (8 lessons, 30 min each). Student knowledge was measured by a volleyball knowledge test consisting of ten questions. Earlier in the year, the student had received consultative support from an APE specialist. However, during this study, only untrained peers supported the student. Consistent with Block and Zeman (1995), both classes significantly improved their mean knowledge and motor skill scores after the unit, but there were
no statistically significant class differences. Moreover, Block’s CAIPE-R (1995) revealed that the inclusion class had more favorable attitudes toward inclusion of a student with a physical disability than the noninclusion class.

This study (Obrusnikova et al., 2003) also had many limitations as intact groups rather than random groups were utilized. In addition, the student with muscular dystrophy had been a student at this school and a classmate to most of the students since kindergarten, so his peers and the GPE teacher were comfortable with this student. Finally, no analysis of the success and participation of the student with a disability was reported. Still, results do show that GPE teachers without support from an APE specialist or TA can include a student with a disability in GPE without negatively affecting the learning of peers without disabilities.

With regard to peers without disabilities, a question arises: What are the effects of and attitudes toward modifying traditional physical education activities to accommodate students with disabilities? An attempt to answer this question was presented in a recent study by Kalyvas and Reid (2003), who examined active participation and enjoyment of students with and without disabilities in a regular game of Newcomb volleyball (players can catch and throw ball rather than hit it) and a modified game of Newcomb volleyball (e.g., smaller court, lower net, use of a balloon, rule requiring all members of team to touch the ball before sending it over the net). Participants were 15 students with physical disabilities (e.g., spina bifida, cerebral palsy; ten ambulatory and five used wheelchairs) and 20 students without disabilities who attended a reverse integrated special school (no explanation of what this meant was provided in the article). A Quasi-Experimental Factorial Design was used in this study. Results showed that the modified game resulted in more activity time and greater success rate, as measured by successful passes for both students with and without disabilities. Both students with and without disabilities enjoyed both the regular and modified games, as measured by the interest and enjoyment subscale of the IMI scale (Ryan, 1982). However, older students without disabilities (ages 10-12) did express some dissatisfaction with the modified game.

Modifications to GPE activities can be an important and effective way to safely and successfully include students with disabilities in GPE. However, modifications that change the nature of the game or slow it down too much (in this case using a balloon) may present problems for students without disabilities. Block (2007) cautioned if modifications are so severe that they change the nature of the game or the challenge of the game then students without disabilities may not only be dissatisfied with the activity but may begin to resent having peers with disabilities in their GPE class.

**Attitudes and Intentions of Children Without Disabilities**

One continuing theme in inclusion research has been examining the attitudes and intentions of children without disabilities. It is recognized that both attitudes and intentions of classmates without disabilities, as documented by numerous studies in GPE (see Hutzler, 2003, for review) play critical role in the successful inclusion of students with disabilities.

The Theory of Planned Behavior (TPB: Ajzen, 1991, 2001), an extension of the Theory of Reasoned Action (TRA; Fishbein & Ajzen, 1975), is the most recent
framework to use when addressing attitudes and intentions in inclusive contexts (Kodish, Kulminna, Martin, Pangrazi, & Darst, 2006; Kozub & Lienert, 2003; Kudlacek, Valkova, Sherrill, Myers, & French, 2002; Tripp & Rizzo, 2006). The TpB suggests that intentions of children to include peers with disabilities are influenced by social expectations (i.e., subjective norms), student attitudes, and perception of control. Classmates who (a) have a favorable attitude toward inclusion of a student with a disability, (b) perceive that significant others (e.g., teachers, parents, or peers) expect them to include a student with a disability, and (c) express a strong feeling of control over the process of inclusion are more likely to have strong intentions to include a student with a disability in GPE.

Researchers have also used contact theory—the idea that “prejudice may be reduced by equal status contact between majority and minority groups in the pursuit of common goals” (Allport, 1954, p. 281)—to explain what factors or variables related to contact quality influence formation of positive attitudes toward children with disabilities (e.g., Murata, Hodge, & Little, 2000; Slininger et al., 2000; Tripp, French & Sherrill, 1995).

For example, Tripp et al. (1995) compared attitudes of students without disabilities, ages 9-12, who either had or did not have direct contact with peers with disabilities in their GPE classes. The classes consisted of 40 to 45 students without disabilities and 3 to 4 students with various disabilities. Data were collected using a Quasi-Experimental (Ex Post Facto) Design and the Peer Attitudes toward the Handicapped Scale (PATHS; 5-point Likert scale; Bagley & Green, 1981). The PATHS allowed for three subscales (physical, learning, or behavior disability) as well as a total attitude score. Results revealed that contact with students with disabilities did not significantly affect attitudes of students without disabilities (both groups had neutral attitudes toward peers with disabilities). Tripp et al. (1995) suggested that the large class sizes in the inclusion classes may have limited the intensity of contact needed to cause significant changes in attitudes.

The variables that significantly influenced attitudes in Tripp et al. (1995) were gender (females significantly more positive than males) and type of disability. Students who attended the integrated GPE program had significantly less positive attitudes toward peers with physical disabilities and significantly more positive attitudes toward peers with behavior disabilities than students who attended a segregated GPE program. Tripp et al. (1995) argued that contact with students with physical disabilities in the integrated setting might in fact have fostered negative attitudes. They suggested that perhaps students with physical disabilities may have slowed down games or resulted in a team losing in a competitive situation. Unfortunately, Tripp et al. (1995) were unable to systematically analyze the content of the GPE program and the frequency and quality (e.g., positive or negative) of the interactions between students with and without disabilities in these two schools to explain the findings. In addition, Tripp et al. (1995) studied students in intact groups (i.e., students who were in an integrated setting simply had students with disabilities in their class) and no attempt was made to intervene and structure the contact with peers with disabilities.

On the other hand, Murata et al. (2000) found contact could have a positive effect on attitudes. Murata and Jansma (1997) originally conducted an intervention study to examine the effects of trained TAs and peer tutors on the inclusion of three high school students with multiple disabilities into GPE. Murata et al. (2000)
then interviewed 12 of the 22 high school students without disabilities who were participants in the original study to describe their perspectives on and experiences with inclusion. The students were initially skeptical and even fearful of inclusion, but these feelings changed over time due to frequent, positive interactions with peers with disabilities. In addition, students reported that over time they began to appreciate and accept individual differences. Murata et al. (2000) noted several variables contributed to the positive results: “(a) there were equal status contacts between and among peers with and without disabilities, (b) social interactions among all students was encouraged by the GPE teacher, (c) contacts were pleasant and rewarding, (d) the contact situations involved common noncompetitive goals, and (e) these individuals had occasion to develop meaningful relationships” (p. 63). In other words, the key to these positive findings was not simply placing students with disabilities into a GPE class. Rather, the GPE teacher and the teacher assistants facilitated social interactions, noncompetitive play, and positive interactions that in turn resulted in positive attitudes of students without disabilities.

Slininger et al. (2000) used a Pretest-Posttest Randomized-Groups Design to determine the effects of structured contact on attitudes and intentions of students toward their peers who had a severe intellectual disability and used wheelchairs. Participants were fourth-grade students without a disability in three intact classes that were randomly assigned to three GPE settings (structured contact, nonstructured contact, and no contact). Siperstein’s Adjective Checklist (1980) was used to measure attitudes, and Siperstein’s Activity Preference Scale and the Friendship Activity Scales (Siperstein, Leffert, & Wenz-Gross, 1997) were used to measure intentions. It should be noted that all students in the class received training on disability and wheelchair use before taking the pretest, and the GPE program was planned specifically with games known to facilitate cooperation and interaction. In the structured contact class, two specific students without a disability were assigned to stay within an arm’s length of their specific peer with a disability and to provide ongoing support to this peer. In the nonstructured contact class, the two target students with a disability were integrated into class activities only during warm-up activities, but in the other GPE activities, they remained on the sidelines where they were taught by their individual paraprofessionals. During warm-ups, peers in the nonstructured contact class were taught to give high fives and interact with peers with disabilities during warm-ups. In the control class, no target students with a disability were brought to class.

Findings of this study (Slininger et al., 2000) showed that attitudes for females were more positive than for males, but female attitudes did not change due to the intervention. Attitudes for males did show significant changes when in the structured contact class from pretest to posttest, but the authors suggested these changes were small and meaningless based on effect size. Therefore, expected attitude changes for the structured class setting did not occur after four weeks (20 lessons, 25 min each) in cooperative games and rhythms. There are many reasons why expected changes in attitudes were not found. First, large class sizes (37 to 49 students) may have limited the interactions between students with and without disabilities that could have affected the results. Second, the students from the “structured” contact class were only encouraged to greet the targeted students when they came to GPE and then “interact with them as much as possible in all activities” (p. 187). It would seem that more intensive instruction in how to interact, play, and assist the students
with disabilities may have resulted in more positive attitude changes. Third and finally, the authors noted students in all three groups already had positive attitudes toward peers with disabilities at pretest, so improvement in attitudes would have to be considerable to show a statistically significant posttest effect (recall that all students received disability awareness training prior to the initiation of the study). Therefore, while structured contact did not significantly improve attitudes, it appears that the students without disabilities did have positive attitudes toward peers with disabilities.

Limited and controversial research evidence exists regarding the benefits of planned disability awareness training on attitudes toward peers with disabilities (Loovis & Loovis, 1997; Lockhart, French, & Gench, 1998). For example, Loovis and Loovis (1997) utilized a One-Group Pretest-Posttest Design and the Children’s Attitude Toward Handicapped Scale (CATHS; 3-point Likert scale; Rapier, Adelson, Carey, & Croke, 1972) to measure attitudes of 430 second- through sixth-grade students from two different elementary schools. The disability awareness program consisted of disability simulations such as orientation and mobility when blindfolded, moving in a wheelchair, and communicating with sign language (length of the intervention was not reported). Females in the study showed statistically significant, positive attitude improvement after the training, while the males showed moderate but not statistically significant attitude improvement. Results of this study should be viewed with caution, as the authors did not employ a control group.

On the other hand, Lockhart et al. (1998) did employ a control group in their study. Participants were 90 fifth-grade students who were randomly selected and assigned into three conditions: Group 1 received “cognitive empathy training” to educate students about the etiology of orthopedic disabilities, group 2 participated in affective empathy training designed to allow students to experience and feel what it is like to have a disability through simulation activities and discussions, and group 3 was the control group that received no special empathy training. Each group had 15 males and 15 females. Group 1 and 2 also had students with physical disabilities included in their GPE classes. In contrast to Loovis and Loovis (1997), using the same attitude inventory, results did not show any significant differences in attitudes among the students after the training (10 days, 30 min each). There also were no differences between females and males in attitudes either at pretest or posttest, which is a stark contrast to Loovis and Loovis (1997), and Slininger et al. (2000). In fact, attitudes for both males and females were more neutral than positive. Lockhart et al. (1998) posited that limited contact with students with physical disabilities and test sensitivity (perhaps the CATHS was not sensitive enough to detect changes in attitudes) might have influenced the results.

Social Interaction

Through the positive findings noted earlier in the paper, actual experiences of students with disabilities in GPE show that inclusion is not always successful. Perhaps the biggest disappointment in the literature on inclusion in GPE is limited social interaction with peers without disabilities (e.g., Ellis, Wright, & Cronis, 1996; Lisbon, 1997; Place & Hodge, 2001), which can lead to limited social learning opportunities for the students with disabilities (Odom, McConnell, & McEvoy, 1992).
For example, Place and Hodge (2001) utilized a case study approach to analyze behaviors of three purposively selected eighth-grade female students with physical disabilities during a six-week softball GPE unit (12 lessons). Two of these students had spastic cerebral palsy (one ambulatory and one used a power wheelchair) and one had spina bifida (used a manual wheelchair). The students attended all general education classes, including GPE, throughout the school day, and knew their 19 peers without disabilities prior to the study. The ALT-PE analysis demonstrated that the three students with disabilities were more likely to engage in off-task behaviors (29% of class time waiting and 2% off task), with little or no instruction or direction from the GPE teacher (10% of class time). In addition, the average percentage of time that students with disabilities engaged with their peers without disabilities was 2% social talk and less than 1% in each category for praise, use of first name, feedback, and physical contact. In fact, most of the interactions observed were between students with disabilities. These findings imply that students with disabilities are not always interacting with their peers without disabilities.

Limited social interactions with peers without disabilities can lead to social isolation, which was partially documented in a qualitative study conducted by Goodwin and Watkinson (2000). The authors used a Hermeneutic Phenomenological Approach to learn about GPE experiences of nine purposively selected fifth- or sixth-grade students with physical disabilities (four with spina bifida, four with cerebral palsy, and one with amputations: four ambulatory and five non-ambulatory). The students reported that they had “good days” and “bad days” when included in GPE. Good days were noted in themes of a sense of belonging and accommodations that allowed these students the opportunities to successfully participate in GPE activities. Thus, people also contributed in very a beneficial way to the positive experiences of the students by affording them a sense of belonging. Bad experiences were noted in the themes of social isolation, questioned competence, and limited opportunities to participate in GPE. It appeared that on bad days the GPE teacher was unable to accommodate the students’ disabilities forcing the students to sit out or take menial rolls in activities (e.g., keeping score). Being on the periphery in a GPE class clearly can lead to social isolation as reported by students in this study.

While research earlier in this paper noted the positive effects of peer tutors and TAs on the successful inclusion of students with disabilities, other research suggests that students with disabilities might view some help negatively. Goodwin (2001) described the implications of supporting behavior on motivation and dependency states in GPE. The data were collected from twelve students with physical disabilities (four with cerebral palsy and eight with spina bifida; two ambulatory and ten used manual wheelchairs), ages 7-13, over a 3.5-month period. A maximum variation sampling technique was used to select participants. The thematic analysis revealed that the students perceived their interactions as either self-supporting or self-threatening. Self-supporting themes were positive in nature and reflected peer interactions that were instrumental, caring, and consensual. Self-threatening themes were negative in nature and reflected a loss of independence, a threat to self-image, help that was reckless, or in some cases interfering. Participant responses to the helping behaviors became more complex with age. Instrumental and caring assistance emerged across all groups, as did loss of independence and concerns for self-esteem. Creating a long-term state of dependency is not beneficial and may lead
to a state of helplessness. Goodwin (2001) suggested that we might want to ponder further the implementation of help that interferes with the independent completion of tasks, help that is imposed rather than offered, and help that overcomes external environmental challenges as opposed to help that implies personal inadequacy.

Another study that explored the experiences of students with disabilities included in GPE was conducted by Hutzler et al. (2002). Ten students with physical disabilities (cerebral palsy and muscular dystrophy: nine ambulatory and one used a wheelchair), ages 9-15, were interviewed in Israel to identify supporting and limiting factors of empowerment, recreational activities, and school trips. Consistent with Watkinson and Goodwin (2000), and Goodwin (2001), results in this qualitative study were mixed. Four students reported positive experiences, such as peers encouraging and even helping them to participate during games and exercises, and six students reported being teased and ridiculed by their peers such as peers imitating their walk, expressing pity, and opening their braces. The negative experiences resulted in negative feelings toward GPE as noted by comments such as “I hate it,” “I am afraid,” “I feel different,” “I am disappointed,” and “I cry.” All participants, whether they had positive or negative experiences in GPE, felt their GPE teachers made no effort to accommodate their needs. Hutzler et al. (2002) suggested these results reflect the following common practice of GPE teachers in Israel when working with students with disabilities: “Let them (students with disabilities) do what they can. The student needs to experience failure and success in order to decide when to participate and when not” (p. 311). Clearly many students with physical disabilities in this study were not receiving appropriate, individualized GPE. Even worse, peers were allowed to tease and ridicule these students with disabilities without any intervention from the GPE teachers.

At least some of the participants in the earlier research (Goodwin, 2001; Hutzler et al. 2002; Watkinson & Goodwin, 2000) had positive experiences in GPE. Unfortunately, 19 out of 20 participants in Blinde and McCallister (1998) reported stories of GPE that were not as positive. Blinde and McCallister interviewed students with various physical disabilities, ages 10-17, from 17 different schools asking them to describe their experiences in GPE. Findings from this qualitative study were consistent in that students reported receiving no accommodations, exclusion from GPE activities, and ridicule by the GPE teachers. For example, one student commented, “I participated in PE once, but I was just a line judge. I just sat there and cheered and did all that. I just sit and watch them and clap and stuff.” Another student said, “my teacher that I had then didn’t have nothing for me to do. I’d sit up on the stage from when I first got there until the end of class every day.” And still another student said, “. . . the instructor told me to leave because I was a liability. So I sat in the library for an hour every day, like having a study hall, and I got an A in PE!” Again, where are the individualized accommodations for these students with disabilities? What could these GPE teachers possibly be thinking? Not surprisingly, the students interviewed in Blinde and McCallister (1998) felt embarrassed, different, sad, and angry when it came to GPE. These feelings were the result of not being able to perform the GPE skills successfully. When asked if he liked participating in GPE, one 13-year-old student said, “Well, not that much, because, about every time I get embarrassed. Because I cannot walk well, I cannot run well, I cannot do volleyball that well. I cannot do any kind of sport well and this here P.E. class I always get embarrassed” (p. 67).
In sum, numerous investigators demonstrated that many students with disabilities often face limited social contact with peers without disabilities when included in GPE. This is particularly troublesome since one of the arguments for including students with disabilities in GPE is for socialization (e.g., Block, 1998). The findings in this section of the paper indicate that inclusion, particularly the social aspects of inclusion, is not always a positive experience for students with disabilities. What will be demonstrated below is that GPE teachers often do not know how to accommodate students with disabilities. As a result, GPE teachers may create situations that lead to limited interactions between students with and without disabilities.

**ALT-PE of Students With Disabilities**

In the first part of this paper we highlighted research (Vogler et al., 1998, 2000) that demonstrated students with disabilities had similar levels of ALT-PE when compared to peers without disabilities. However, a study by Temple and Walkley (1999) revealed that students with disabilities may experience limited ALT-PE. Data on student behaviors were collected in 24 GPE classes. Participants were 24 GPE teachers, a total of 24 elementary and middle school aged students with mild intellectual disabilities, and a total of 48 elementary and middle school aged students without disabilities. Each class included one student with a disability and two students without a disability (class sizes were not reported). The ALT-PE analysis demonstrated that students with and without disabilities spent approximately the same time in the combined context of motor or knowledge activity (59.3% of class time). The students with disabilities were, however, significantly less motor appropriately engaged with the content than students without disabilities. In other words, when students with mild intellectual disabilities were engaged in motor activities, they were not very successful. These results suggest that while students with mild disabilities were included, no efforts were made by the GPE teacher to provide any accommodations for these students (e.g., curricular, equipment, or instructional adaptations) to ensure their success. Perhaps the GPE teachers in this study felt that if the students were included in GPE then the expectations for participation and success should be the same as peers without disabilities. Perhaps the GPE teachers would make more accommodations for students who had very visible disabilities such as physical disabilities.

However, this lack of accommodations for students with disabilities was also a theme in Hodge, Ammah, Casebolt, LaMaster, and O’Sullivan (2004) and Smith and Green (2004). Hodge et al. (2004) found that large GPE class-sizes of up to 100 students made individual accommodations almost impossible, while Smith and Green (2004) found that the seven GPE teachers they interviewed felt that accommodating students with disabilities in GPE would negatively affect the experience of students without disabilities. As a result, these GPE teachers were resistant to making such accommodations.

**Training and Attitudes of GPE Teachers**

Another disappointing, yet not surprising, finding from the data based literature is that GPE teachers possess negative feelings toward inclusion. These negative
feelings often derive from GPE teachers’ perception of inadequate training and from lacking the experience and knowledge to successfully include students with disabilities. In fact, several studies found that practicing GPE teachers did not feel prepared to include students with disabilities in GPE (Chandler & Greene, 1995; Hodge et al., 2004; Lieberman, Houston-Wilson, & Kozub, 2002; Lienert et al., 2001; Smith & Green, 2004).

For example, Chandler and Greene (1995) conducted a statewide survey to determine placement options, number of students with disabilities served, and amount of in-service training received. Participants (39 APE specialists and 148 GPE teachers) were randomly selected from the State of Kansas. With regard to training, 88.9% of both APE and GPE teachers reported receiving at least one in-service on inclusion in general. However, only six teachers reported receiving any specific in-service training on inclusion in GPE, and these six noted that they received this training through state and regional workshops rather than through their school district. APE specialists reported receiving more in-service training compared to GPE teachers, but their training also was received at state and regional professional conferences. Even though the study did not measure perceived competence and was conducted in only one state, it clearly suggests that GPE teachers, and even APE specialists, are not given enough training by their local school districts to feel competent to adequately meet the needs of students with disabilities who are included in their GPE programs.

In addition, some students with disabilities (those who require more modifications) no doubt present more challenges to GPE teachers. For example, Sideridis and Chandler (1996) examined attitudes of music and GPE teachers toward teaching students with physical or behavior disabilities. Participants (56 GPE teachers and 54 music teachers) were randomly selected from the State of Kansas. The Teacher Integration Attitudes Questionnaire (4-point Likert scale), which was created and validated by the authors (Sideridis & Chandler, 1995), revealed that GPE teachers’ attitudes were more favorable toward teaching students with behavior disorders in their classes than those of music teachers. On the other hand, music teachers had significantly more favorable attitudes toward teaching students with physical disabilities compared to GPE teachers. These results are not surprising given that a student with a physical disability would present more challenges to a GPE teacher, while a student with a behavior disorder would present more challenges to a music teacher.

Research has also revealed that teacher attitude is influenced not only by type of disability but also by level of disability. To illustrate, Block and Rizzo (1995) examined the relationship between attitudes toward teaching students with severe or profound disabilities in GPE classes and selected attributes (teaching assignment, teaching level, APE coursework, special education coursework, years teaching, and perceived competence) of 91 K-12 public school GPE teachers from Midwestern suburban school districts. The PEATID-III inventory (5-point Likert scale; Rizzo & Vispoel, 1991) revealed that GPE teachers were neutral regarding teaching students with severe disabilities in their GPE classes and unfavorable toward teaching students with profound disabilities. Favorable attitudes toward teaching students with severe disabilities were associated with quality of teaching experiences and coursework in APE, while favorable attitudes toward teaching students with profound disabilities were associated with coursework in special education and perceived competence.
Similar results were reported in a study by Duchane and French (1998). The PEATID-III revealed that 182 middle school GPE teachers selected from a Midwestern state had neutral to slightly negative attitude toward teaching students with disabilities. In addition, attitudes toward teaching students with mild intellectual disabilities were positive, while attitudes toward teaching students with emotional disturbances and severe disabilities were negative. These results are supported by earlier work of Rizzo and colleagues (e.g., Rizzo & Wright, 1987; Rizzo & Vispoel, 1991). Unique to the Duchane and French study (1998) was that regardless of attitude, GPE teachers reported using a different grading criterion for their students with disabilities compared to their students without disabilities. Students with disabilities were graded mostly on participation, dressing, and effort, while students without disabilities were graded more on written, fitness, and skill tests. On the one hand, results can be interpreted positively as it shows GPE teachers willing to accommodate how they assign grades to students with disabilities. On the other hand, these results might reflect that GPE teachers have lower expectations of children with disabilities (not grading them on ability or performance) and are happy if students with disabilities are busy, happy, and good (Placek, 1983).

Lieberman et al. (2002) found that GPE teachers believed they faced many barriers when including students with visual impairments in GPE classes that revolved around lack of preparation. These teachers (n = 148) were attending a workshop on physical education for students with visual impairments, so they were a select, interested group of GPE teachers. The data were collected at the beginning of the workshop using a questionnaire that was specially developed for the study. Results showed that 66% of the GPE teachers rated lack of professional preparation as the biggest barrier to inclusion in GPE. Again, it seems that we are asking GPE teachers to include students with visual disabilities without providing these GPE teachers with much pre-service or in-service training. However, it was encouraging to see that these teachers were taking the initiative to attend a workshop to better their skills in working with students with visual impairments. Other barriers to inclusion reported were lack of equipment (63%), programming/curriculum (57%), and time in schedule (56%).

Again, this research supports findings from other studies reviewed in this section that GPE teachers do not feel prepared to include students with disabilities into their GPE program. Such lack of preparation can lead to feelings of incompetence that in turn may lead to negative attitudes toward students with disabilities. It is noteworthy that much of the recent attitude research has focused on pre-service GPE teachers, but it seems that more research certainly is needed to evaluate potential negative attitudes and feelings of incompetence in practicing GPE teachers. Of particular importance would be examining the effects of in-service training and support on the attitudes of GPE teachers.

It should be noted that not all GPE teachers feel inadequately prepared or have negative attitudes toward inclusion (Hardin, 2005; Hodge et al., 2004; Maeda, Murata, & Hodge, 1998). For example, Hardin (2005) and Hodge et al. (2004) found that the GPE teachers they interviewed (5 and 9, respectively) had mixed attitudes (some positive, some negative) toward teaching students with disabilities in GPE. Participants in both studies supported the concept of inclusion and felt that “... jumping right in—gaining valuable teaching experience through trial
and error . . . " (Hardin, 2005, p. 51) was the best way for GPE teachers to become more comfortable and confident with students with disabilities.

**Summary**

There are numerous positive outcomes of inclusion in GPE based on research conducted in the past ten years. Data collection instruments indicated that students with disabilities (a) can be successfully included in GPE when given proper support, (b) do not have any negative effect on peers without disabilities, and (c) tend to have moderately positive attitudes toward peers with disabilities. But much more research is needed. For example, authors of peer tutoring studies found clear support for using trained peer tutors to assist elementary aged students with relatively mild disabilities in GPE. The questions remain whether or not peer tutoring is an appropriate instructional strategy for all grade levels and students with severe disabilities (e.g., severe intellectual disabilities, low-functioning autism, severe forms of cerebral palsy, or progressive disabilities). Such positive effects on students with severe disabilities were found in a study by Block and colleagues (2001), but the study was conducted in a self-contained setting. It would also be interesting to determine if class wide peer tutoring—peer instruction in class wide, reciprocal role arrangements—increases academic engagement, achievement, and social competence of students with disabilities in GPE.

Related to peer tutoring is the effects of peer tutoring on interactions between children with and without disabilities outside of the GPE setting. Research is needed to understand the extent to which these interactions are transferred into other settings (playground, lunchroom, after school). Also, there has been no effort to determine the effects of peer tutoring in GPE on the peer tutors themselves. It often is assumed that interacting with peers without disabilities will have a positive effect on a peer tutors’ self esteem, but there has been no systematic attempt to measure such improvements. Qualitative research methods (e.g., focus group discussions) would be an appropriate design for this type of research.

One surprising finding is that disability awareness training does not seem to have a positive influence on attitudes. Intuitively, one would expect a disability awareness program to result in positive changes in attitudes. Again, with the exception of the Lockhart et al. study (1998), these disability awareness studies in particular had some design flaws that should be addressed in future research in order to truly determine if disability awareness training in GPE is effective. A mixed research design including focus group discussions or a series of individual interviews might help us understand the components of a disability awareness program that are more or less effective in changing attitudes and ultimately behaviors toward peers with disabilities. Also, it would be important for future research to validate instruments for specific studies (e.g., Kodish et al., 2006; Tripp & Rizzo, 2006), as well as report effect size estimates along with statistical tests to allow the readers better evaluate and interpret research results (Thompson, 1999).

Research also shows that there are some problems associated with inclusion in GPE. The major problem seems to be the ability of GPE teachers to accommodate students with disabilities, which in turn reflected in negative experiences of students with disabilities in inclusive GPE settings. Reports from students with disabilities in both Goodwin and Watkinson (2000) and Hutzler et al. (2002) show
both positive and negative experiences, while students with disabilities in Blinde and McCallister (1998) were virtually all negative. In all three studies, it appears that their GPE teacher did not accommodate students with disabilities. In addition, the GPE teachers did not seem to take the time to prepare peers without disabilities on how to befriend and be more accepting of peers with disabilities. While this certainly paints a negative picture of GPE teachers, GPE teachers have consistently reported limited competence (Block & Rizzo, 1995), limited training (Chandler & Greene, 1995; Hodge et al., 2004, Lieberman et al., 2002; Lienert et al., 2001; Smith & Green, 2004), and barriers such as large class sizes (Hodge et al., 2004). Clearly, more in-service training such as reported by Lieberman et al. (2002) and more efforts at preparing peers without disabilities such as those by Houston-Wilson et al. (1997), Lieberman et al. (1997, 2000), Lockhart et al (1998), Loovis and Loovis (1997), Murata and Jansma (1997), Slininger et al. (2000), and Tripp et al. (1995) are needed to help GPE teachers more successfully include students with disabilities in GPE classes.

While there has been an extensive body of research describing attitudes of GPE teachers toward inclusion in GPE, of perhaps greater interest to our field is how these attitudes can be changed? What factors in professional development enable a GPE teacher to understand and value inclusive instructional strategies and change attitudes toward inclusion of students with disabilities? Again, it would seem that identifying a GPE teacher with a negative attitude and collecting qualitative data would provide the detailed information on how to change attitudes that our field is sorely missing. Also, the TpB (Ajzen, 1991, 2001) suggests that attitudes are related to intentions and intentions are related to behaviors; yet, there has been no research that has systematically examined the ability of the TpB to predict the intentions and behaviors of GPE teachers to include children with disabilities in inclusive contexts. More naturalistic observations and discussion with GPE teacher about issues related to inclusion would perhaps yield richer data that would translate more directly to practice.

One final thought on future research has to do with the implementation of modifications for a child with a disability. Kalyvas and Reid (2003) provided the first study that examined how peers without disabilities felt about accommodations to GPE activities. Certainly, a replication of this study with different physical education activities, fewer modifications, and older students is warranted to gain a better understanding of how to best accommodate students with disabilities in a variety of inclusive contexts. Using a design other than that used by Kalyvas and Reid, several students could first complete a survey on a sample of accommodations to certain GPE activities. Then, accommodations deemed not appropriate by peers could be discussed in greater detail in a focus group. Finally, various accommodations could be implemented for a variety of activities with the researcher describing the effects of the accommodations and then discussing with both students with and without disabilities how they felt about the accommodations.

References

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